

Unit 3:the Atmosphere

Atmosphere: it is a mixture of gases surrounding the earth and attracted to the it by the effect of gravity.

Importance of atmosphere:

1-it protects the Earth by absorbing ultraviolet radiations.

2-It adjusts the temperature of the Earth's surface.

Structure of the atmosphere:

1- Nitrogen gas that represents 78% of the atmosphere.

2- Oxygen gas that represents 21% of the atmosphere.

3- Carbon dioxide gas and other gases that represents 1% of the atmosphere.

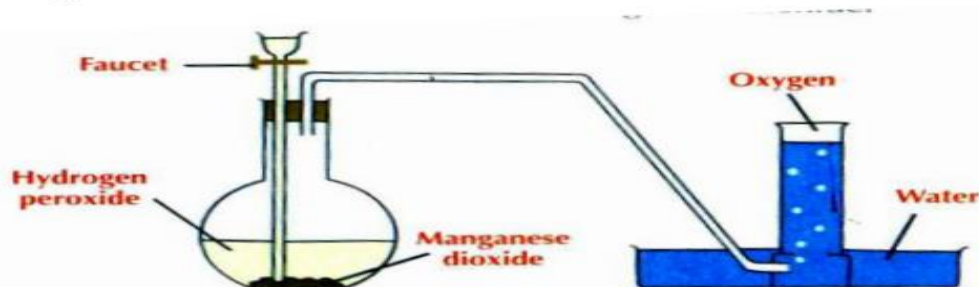
Oxygen gas

Structure of oxygen:-

It consists of two –atoms molecules so it is symbol as O_2 .

Preparation of Oxygen

تحضير الاكسجين



- The ratio of oxygen doesn't change in air.

Because the used Oxygen in respiration and combustion processes is always compensated by photosynthesis, where green plants take carbon dioxide & produce oxygen.

Note:

- The scientist who discovered Oxygen is **Josef Priestley**.

The scientist **Antoine Lavoisier** gave it the name oxygen.

Properties of oxygen

- 1-It is (colorless, tasteless and odorless).
- 2-It **scarcely** (rarely) dissolves in water.
- 3-It has a **neutral** effect on (red and blue) litmus papers.
- 4-Oxygen **doesn't burn**, but helps in burning.
- 5-Oxygen is **heavier** than air as it replaces the air upward.

The direct combination between oxygen and elements

Element + oxygen Element-----→ oxide

Oxygen combines with elements in two ways

- A) **oxidation(rusting)**:it is a **slow** combination of oxygen with elements in the presence of water.
- B) **Combustion (burning)**: it is a **rapid** combination of oxygen with elements and it produces heat and light.

The importance& uses of oxygen:

1. Oxygen is important in respiration and food combustion processes to produce energy necessary for vital activities.
2. **Water** consists of oxygen united with Hydrogen [H_2O]

Ozone molecule is composed of three oxygen atoms [O_3] which forms the ozone layer.

✓**The Ozone** layer protects the Earth from the harmful radiation that comes from the sun.

3. Oxygen is compressed in iron cylinders& used in:

- a. Mechanical ventilation for patients who suffers from breathing difficulties.
- b. During surgeries.
- c. During diving& climbing mountains. **Why?**

Because oxygen is heavier than air, so its percentage decreases as we rise above the Earth's surface).

d. Cutting& welding metals:

When combines with Acetylene gas to produce(Oxyacetylene flame)

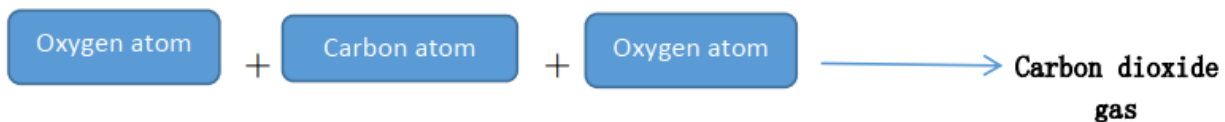
Note: The mass of the element increases when it combines with oxygen rusting.



Carbon dioxide

Carbon dioxide gas forms 0.03% of the volume of atmosphere.

Structure of carbon dioxide gas:

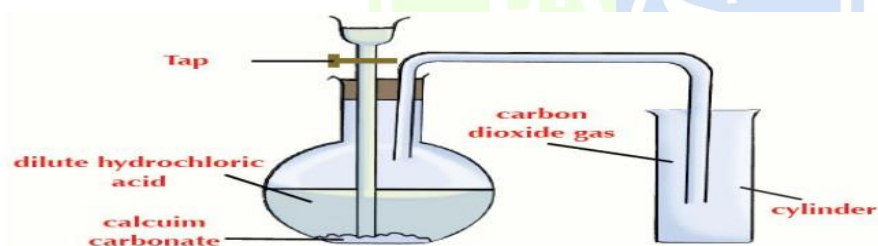


Sources of carbon dioxide gas:

1-Respiration of all living organisms during exhalation.

2-Combustion of organic substances such as oil, coal and gasoline.

Preparation of carbon dioxide gas in lab:



Properties of carbon dioxide gas:

1-it does not burn and does not help in burning.

2-It easily dissolves in water, so it is not collected by displacement of water.

3-It is heavier than air so it is collected by upward displacement of air .

4-It is a colorless and odorless gas.

5-It reacts with magnesium forming magnesium oxide(white powder) and carbon (black substance).

Harms of the increase of carbon dioxide gas:

1-suffocation of living organisms.

2-Increasing temperature of the Earth's atmosphere (global warming)

➤ **The percentage of carbon dioxide in air decreases.**

▪Green plants can't make their food [Photosynthesis]

▪No enough food or oxygen.

Importance and uses of Carbon dioxide:

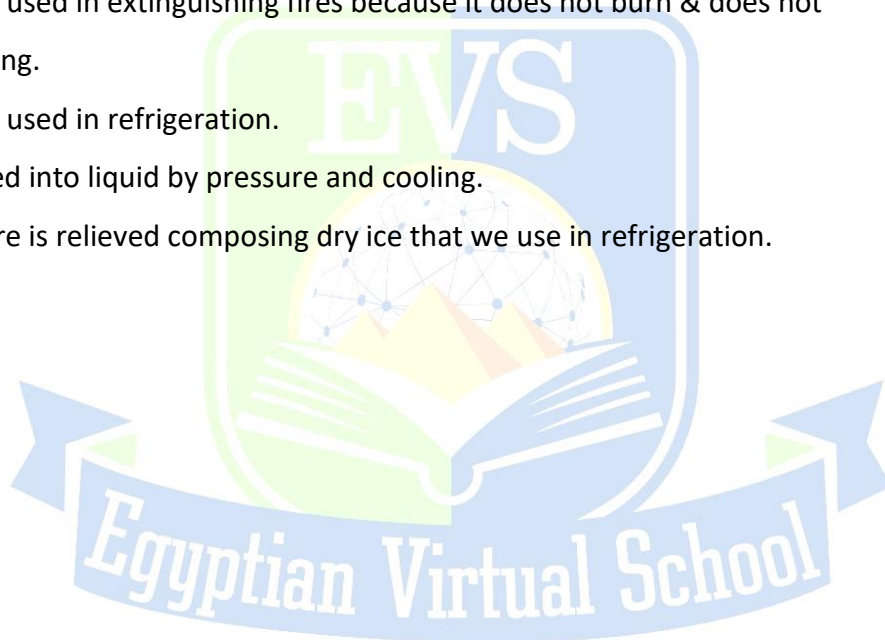
1. Carbon dioxide gas is used in Photosynthesis process in green plants to produce food& oxygen.
2. CO₂ gas is used to make soft drinks.
3. CO₂ gas is used to make bread bubbled as yeast.

The yeast produces carbon dioxide by fermentation process& carbon dioxide get expanded due to the heat making the bread porous& tasty.

4. CO₂ gas is used in extinguishing fires because it does not burn & does not help in burning.
5. CO₂ gas is used in refrigeration.

It is converted into liquid by pressure and cooling.

Then pressure is relieved composing dry ice that we use in refrigeration.



1- OXYGEN:-

Q Complete:-.

📖 1-The atmosphere consists of a mixture ofsurrounding.....

📖 2-The oxygen gas of the atmosphere is consumed during and process

📖📖 3-Oxygen is prepared fromin presence of

📖📖 4-Oxygen is produced fromprocess and carbon dioxide produced from process.

📖 5-From the uses of oxygen gas areand

Q Choose the correct answer :-

📖 1-The percentage of oxygen gas in atmosphere equals...(87% - 12%-21% - 30%)

📖 2-gas is used with acetylene to weld metals

(oxygen – nitrogen – carbon dioxide)

📖 3-Oxygen is present in the atmosphere in gas state in form of molecules , its structure (O – O₂– O₃ – O₄)

📖 4-Respiration and combustion process consumegas (oxygen– nitrogen – argon – carbon dioxide)

📖 5-Hydrogen peroxide decomposes in presence of manganese dioxide to (oxygen and hydrogen – oxygen and water – hydrogen and water – hydrogen and manganese)

📖📖 6-Hydrogen peroxide is used in preparation of

(hydrogen – nitrogen – oxygen – carbon dioxide)

📖 7-The gas which is used with acetylene in welding metals isgas

(Oxygen– Nitrogen – hydrogen- carbon dioxide)

Q Write S-term :-

📖📖 1-A gas molecules consist of three atoms of oxygen.

📖 2-A gas used in its preparation hydrogen peroxide

📖 3-A gas its molecule consists of three oxygen atoms and forms a layer of atmosphere

📖📖 4-A flame used in cutting and welding metals

Q Mention the function of or what is the importance of the following:-

📖 Oxygen gas in nature

Q Correct the following statements or rewrite the following sentences after correcting: :-

📖 1-Oxygen gas not burn and not help burning

📖 2-The molecule of ozone gas consist of four oxygen atoms

📖 3-Carbon dioxide gas is essential to form rust

Q Give reason :-or what is the scientific reason or justify:-

📖 1-Oxygen ratio still constant in atmospheric air although a large part of it consumed during respiration and combustion processes

📖 1-The oxygen ratio is constant in atmospheric air

**📖 2-The atmosphere has great importance in the continuity of life on earth

****📖📖3-**Oxygen is collected by down displacement of water during its preparation in laboratory

📖4-Divers use oxygen cylinders during diving in water.

****📖5-**Manganese dioxide still without change in quantity and properties during preparation of oxygen

📖6-Oxygen cylinders are used during mountain climbing

****📖7-**Ozone gas is very important in nature

****📖8-** oxygen gas doesn't change colour both of red and blue litmus paper

Q what happen if or what would happen in the following cases:-

📖1-There is no oxygen in the atmospheric air

📖2-A nail wetted by water is exposed several days to humid air

📖3-The decrease of oxygen quantity in nature

📖4-if you know that oxygen doesn't burn but help in burning what happens if oxygen percentage in air is more than 21%

📖5-A mass of cleansing before and after heating

Q Explain the following:-

📖1-During oxygen preparation the gas is collected by down displacement of water in the jar.

****📖📖2-**Ozone layer has great importance in the life of creatures on the earth surface

📖📖3-The mass of aluminum wire increase after heating till it become red

4-Oxidation and combustion


Components of the atmosphere

Q What is the main use of :-

1-The oxyacetylene flame

5-CARBON DIOXIDE:-



Q Complete:-..


 1-Carbon dioxide gas is produced as result of the combustion of substance as also produces from of living organism.


 2-The properties of carbon dioxide gas are and

 3-The sources of carbon dioxide gas are and


Q Choose the correct answer :-


  1-Photosynthesis process in the plant depend on the presence of (oxygen – nitrogen – carbon dioxide – ozone)

 2-Which of the following can be obtained on adding dilute hydrochloric acid to calcium carbonate powder (nitrogen – oxygen – hydrogen – carbon dioxide)

 3-When the exhaled gas passed through clear lime water , it becomes turbid forming substance called

(calcium carbonate – calcium oxide – calcium hydroxide)

 4-When a glowing magnesium ribbon is placed in a jar containing carbon dioxide, on the walls of the jar , the element formed is (oxygen – nitrogen – hydrogen- carbon)

 5-Carbon dioxide gas is used in (steel industry – gun powder – ammonia industry – bread)

📖📖 6-The gas which turn lime water turbid isgas .

(oxygen – nitrogen – carbon dioxide)

📖 7-A gas can be prepared by using calcium carbonate powder and dilute hydrochloric acid is(oxygen –nitrogen- carbon dioxide)

Q Write S-term :-

📖📖 1-A gas used to put off fires

📖 2-The gas that turns lime water turbid

📖 3-A gas produced from respiration and comes out with exhaled gas

📖 4-A gas used in photosynthesis process

put ✓ or ✗ and correct:-

📖 1-Carbon dioxide gas turns clear lime water turbid

📖 2-Carbon dioxide is used in manufacture of soft drink

📖 3-Formation of a black ppt when carbon dioxide gas is passed on a clear lime water

📖 4-Carbon dioxide is prepared by downward displacement of air

📖 5-Carbon dioxide gas is used in making dry ice and soft drinks

📖 6-From the characteristics of oxygen ,that it is a colorless and odorless gas , and easily dissolves in water

Q Correct the following statements:-

📖 1-A black precipitate is formed when carbon dioxide gas is passed in lime water

Q Give reason :-or what is the scientific reason :-

📖 1-Clear lime water is used to detect the presence carbon dioxide

📖 2-Decreasing the green areas harm the environment

📖 3-Carbon dioxide is used in extinguishing fires

📖 3-Carbon dioxide gas is used in putting off fires

📖 4-Yeast is added to dough on making bread

📖 5-in last years, the environment is suffered from increasing of the percentage of carbon dioxide

**📖 6-The ratio of carbon dioxide gas increase in nature in last years

📖📖 7-Carbon dioxide gas has great vital importance in life continuity on earth surface

📖 7-Carbon dioxide gas is important for nature

**📖 8-When carbon dioxide gas passes in clear lime water it becomes turbid

**📖 9-yeast is added to dough during making bread

Q what happen if or what would happen in the following cases:-

📖 1-The percentage of carbon dioxide gas in the atmospheric air increase

📖 2-The percentage of carbon dioxide gas in the atmospheric air decrease

📖 2-The decrease of the carbon dioxide quantity in nature

📖 3-A glowing magnesium ribbon is placed in a gar filled by carbon dioxide gas

📖 4-Drinking big quantities of soft drink

📖 Why the lime water is used in detection of presence of carbon dioxide gas

Oxygen Revision 1

*Choose the correct answer :

- 1- The respiration process and combustion of food needgas.
a. oxygen b. nitrogen c. argon d. carbon dioxide
- 2- Photosynthesis process requires the presence of
a. carbon dioxide gas b. water and mineral salts
c. chloroplasts and light energy d. (a), (b) and (c)
- 3- Oxygen gas exists in the atmosphere in a form of
a. O b. O₂ c. O₃ d. O₄
- 4- Oxygen is produced from process.
a. burning b. oxidation c. photosynthesis d. respiration
- 5- Hydrogen peroxide is used in preparing
a. hydrogen gas b. oxygen gas
c. nitrogen gas d. carbon dioxide gas
- 6- is used as a catalyst in the preparation of oxygen in lab.
a. Manganese oxide b. Manganese dioxide
c. Hydrogen peroxide c. Magnesium oxide

*Correct the underlined words :

- 1- The ratio nitrogen in the atmosphere is 21%. (.....)
- 2- Water is composed of oxygen and nitrogen. (.....)
- 3- Nitrogen gas is essential to form rust. (.....)
- 4- Oxygen is prepared by downward displacement of air.
(.....)
- 5- Hydrogen peroxide dissociates in the presence of a catalyst to nitrogen and oxygen. (.....)

*Complete the following sentences :-

- 1- The atmosphere consists of a mixture of surrounding
.....

- 2- The percentage of oxygen gas in atmosphere equals
- 3- gas is used in photosynthesis process and gas evolves from this process.
- 4- The oxygen gas is produced plentifully from during process.
- 5- Oxygen gas of the atmosphere is consumed duringand processes.
- 6- The green plants produce oxygen gas during the process and produce carbon dioxide gas during the process.
- 7- Oxygen gas is prepared by the decomposition ofin the presence of
- 8- During preparation of oxygen, hydrogen peroxide is dissociated into and

***Give reasons for each of the following:-**

- 1- The percentage of oxygen gas remains constant in the atmosphere.
- The ratio of oxygen remains constant in air although it is consumed during respiration and combustion processes.

.....

.....

- 2- Although smoke and dust particles are considered air pollutants, they have an important role in the formation of rains and snow.

.....

- 3- The atmosphere has a great importance for the continuity of life on the Earth.

.....

.....

***What happens when?**

- 1- There is no atmosphere.

.....

2- There is no oxygen in the atmosphere.

.....

3- Leaving iron nails in moist air for a long time.

.....

*** The shown apparatus represents the preparation of oxygen gas in laboratory**

a. Write the labels indicated by the numbers:

❶ ❷

❸ ❹ ❺

b. 1. The produced gas is used in and

2. Oxygen is heavier than air, so its percentage

c. Write your observation on this activity.

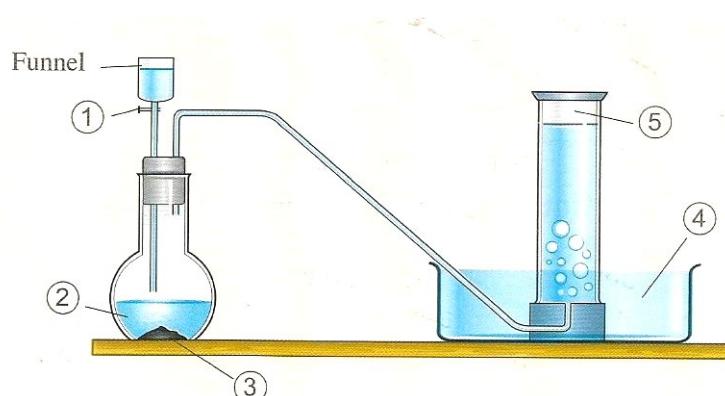
.....

d. What is the importance of no. ❸ ?

.....

e. How is oxygen gas collected ? Why ?

.....



Oxygen Revision 2

***Choose the correct answer :**

1- Ozone molecule is composed ofoxygen atoms.

- a. one b. two c. three d. four

2- The rapid combination between oxygen and elements producing heat and light is called

- a. burning. b. oaidation c. respiration d. reduction

3- Water molecule consists ofatoms.

- a. one oxygen and two nitrogen b. one oxygen and two hydrogen
c. two oxygen atoms d. two hydrogen and one nitrogen

4- gas is used with acetylene to weld metals.

- a. Oxygen b. Nitrogen c. Hydrogen d. Carbon dioxide

5- Oxygen cylinders are used

- a. during surgeries.
- b. in diving
- c. in climbing the mountains
- d. (a), (b) and (c)

6- Oxy-acetylene flame is obtained as a result of combination between

- a. oxygen and hydrogen b. acetylene and hydrogen
c. acetylene and nitrogen d. acetylene and oxygen

7- protects Earth from harmful radiations coming from the sun.

- a. Oxygen gas b. Nitrogen gas
c. Carbon dioxide gas d. Ozone layer

8- The temperature of oxy-acetylene flame reaches.....

- a. 35°C b- 350°C c.3500°C d. 200°C

***Write the scientific term of each of the following :**

1- A gas that is prepared from hydrogen peroxide. (.....)

2- A gas that is molecule is composed of three oxygen atoms.

 (\dots)

3- The gas that is consumed during respiration and combustion processes.

$$(\dots)$$

4- The way by which oxygen gas is collected during its preparation in laboratory. (.....)

***Complete the following sentences :-**

1- The rapid combination between oxygen and elements producing heat and light is called

2- The slow combination between oxygen and elements in the presence of moisture is called

3- Iron combines with oxygen forming

4- causes corrosion of ironware such as bridges' pillars.

5- Ironware must be isolated byto protect them from

6- The mass of the materialsafter combination with oxygen.

7-molecule consists of two hydrogen atoms and one oxygen atom.

8- Thelayer protects the Earth from harmful radiation that comes from the sun.

9-and are from the uses of oxygen gas.

10-gas can be compressed inthat used for patients who suffer from breathing difficulties.

***Give reasons for each of the following:-**

1- Oxygen is collected by downward displacement of water.

.....

2- Manganese dioxide acts as a catalyst during the preparation of oxygen.

.....

3- When you burn a ball of cleansing wire strongly, its mass increases.

.....

.....

***Mention one importance of:**

1- Ozone layer.

.....

2- Oxy-acetylene flame.

.....

3- Manganese dioxide during the preparation of oxygen in the laboratory.

.....

***What happens when?**

1- The percentage of oxygen gas in air is more than 21%.

.....

2- A lighted magnesium ribbon is placed in a jar filled with oxygen.

.....

3- The percentage of oxygen gas decreases in the atmosphere.

.....

4- The mass of cleansing wire before and after heating.

.....

Carbon Dioxide Revision 1

*Choose the correct answer :

- 1- The ratio of carbon dioxide gas in air is
a. 1% b. 0.03% c. 21% d. 78%
- 2- The gas which makes limewater turbid is
a. oxygen b. nitrogen c. carbon dioxide d. ozone
- 3- The symbol of carbon dioxide is
a. CO b. CO₂ c. CH₄ d. C₂O₂
- 4- Carbon dioxide is produced from
a. exhalation process. b. photosynthesis process.
c. burning of a candle. d. (a) and (c).
- 5- Photosynthesis process depends on the presence ofgas.
a. oxygen b. nitrogen c. carbon dioxide d. ozone
- 6- Combustion of is (are) from the resources of carbon dioxide gas.
a. wood b. tobacco c. gasoline d. all the previous answers
- 7- Calcium carbonate is used in preparation ofgas.
a. hydrogen b. oxygen c. nitrogen d. carbon dioxide
- 8- Carbon dioxide gas evolves by adding diluted hydrochloric acid to the powder of
a. calcium carbonate b. calcium oxide
c. calcium hydroxide d. calcium chloride.

*Put (✓) or (✗) then correct the wrong ones:

- 1- Formation of a black ppt. when carbon dioxide gas is passed on a clear limewater. ()
.....
- 2- Carbon dioxide is prepared by downward displacement of air. ()
.....

3- Carbon dioxide gas turbid the clear limewater. ()

.....

4- Limewater is used to detect the presence of nitrogen gas. ()

.....

5- Oxygen is collected during its preparation in laboratory by upward displacement of air. ()

.....

6- Oxygen is produced as a result of combustion of wood, tobacco and coal. ()

.....

***Complete the following sentences :-**

1- The ratio of carbon dioxide gas in atmospheric air isand has the symbol of

2- Carbon dioxide molecule consists of oneatom linked with two atoms.

3- Carbon dioxide which is produced fromandturbids the clear limewater.

4- is a chemical substance used to detect the presence of carbon dioxide gas in air.

5- Carbon dioxide gas is produced as a result of the combustion of substances such as and also produced fromof living organisms.

6- gas is very important in photosynthesis process of green plants.

***Give reasons for each of the following:-**

1- Clear limewater gets turbid if carbon dioxide passes through it.

.....

.....

2- Decreasing the green areas harm the environment.

.....

***What happens if.....?**

1- One carbon atom linked with two oxygen atoms.

.....

2- You blow in a jar contains clear limewater.

.....

3- Dilute hydrochloric acid is dropped over calcium carbonate.

.....

***Look at the following figure, then answer:-**

a. Write what represents each label on the figure:

- Liquid ❶ :

- Substance ❷ :

b. Mention three uses for the evolved carbon dioxide gas:

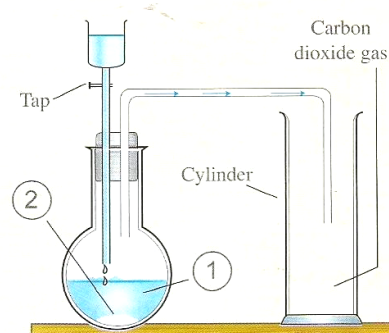
1.

2.

3.

c. Carbon dioxide is collected by upward displacement of air. Why ?

.....



Carbon Dioxide Revision 2

*Choose the correct answer :

1- When a glowing magnesium ribbon is inserted in a jar containing carbon dioxide gas, element deposits on the wall of the jar.

- a. magnesium b. nitrogen c. carbon d. oxygen

2- Carbon dioxide is used in the industry of

- a. steel b. gunpowder c. fertilizers d. soft drinks

3- By adding yeast to dough, is produced and expanded by heat, so it makes bread porous and tasty.

- a. oxygen gas b. carbon c. carbonate d. carbon dioxide gas

4- All the following are properties of carbon dioxide gas except

- a. it is a colourless and odorless gas
b. it rarely dissolves in water
c. it doesn't burn and doesn't help in burning
d. it is heavier than air

5- Which of the following is form the uses of carbon dioxide gas?

- a. Making dry ice b. cutting and welding of metals
c. Formation of ozone layer d. Mechanical ventilation

*Put (✓) or (✗) then correct the the wrong ones:

1- Oxygen is collected during its preparation in laboratory by upward displacement of air. ()

.....

2- Limwater is used to detect the presence of nitrogen gas. ()

.....

3- Passing carbon dioxide gas through clear limewater turns its colour into blue. ()

.....

4- When carbon dioxide gas passes through limewater, calcium carbonate is formed. ()

.....

5- Calcium carbonate is a chemical substance that is soluble in water. ()

.....

6- Carbon dioxide gas turbids the clear limewater. ()

.....

7- Exhaled air contains a large amount of carbon dioxide gas. ()

.....

8- Oxygen is produced from the respiration of bean seeds. ()

.....

9- Formation of a black ppt. when carbon dioxide gas is passed on a clear limewater. ()

.....

10- During photosynthesis process, the plant produces oxygen gas. ()

.....

11- Carbon dioxide is prepared by downward displacement of air. ()

.....

***Write the scientific term of each of the following :**

1- A gas that produced from respiration and comes out with exhalation process.
(.....)

2- A phenomenon occurs due to the increase in the percentage of carbon dioxide gas in air which raises the Earth's temperature. (.....)

3- It is produced as a result of the reaction between lemon juice and sodium bicarbonate. (.....)

4- A gas that doesn't burn and doesn't help in burning. (.....)

5- The gas that is heavier than air and easily soluble in water.
(.....)

6- The gas that turns limewater into turbid. (.....)

***Give reasons for each of the following:-**

1- Clear limewater gets turbid if carbon dioxide passes through it.

.....
.....

2- Carbon dioxide gas has a great vital importance in life continuity on the Earth's surface.

.....
.....

3- Cutting forests leads to the increase in the percentage of carbon dioxide gas in nature.

.....
.....

4- Carbon dioxide gas has many benefits.

.....
.....

***What happens if.....?**

1- Lemon juice reacts with sodium bicarbonate.

.....

2- The pressure on liquefied carbon dioxide is relieved.

.....

3- Yeast is added to dough during making bread.

.....

4- Drinking big quantities of soft drinks.

.....

***Compare between oxygen gas and carbon dioxide gas according to their properties:**

Oxygen gas	Carbon dioxide gas
.....
.....
.....
.....
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.....

Unit (three) revision questions

Q (1) Answer the following:

1- What are the sources of Oxygen gas in the air?

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2- What are the components of the Earth's atmosphere?

.....

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3- Mention the importance of the atmosphere.

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.....

.....

4- What are the properties of oxygen gas?

.....

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5- What are the uses and the importance of Oxygen?

.....

.....

.....

6- Mention the benefits and the harms of Carbon dioxide.

.....

.....

.....

.....

7- What are the properties of carbon dioxide?

.....

.....

.....

8- What are the sources of carbon dioxide?

.....

.....

9- What are the uses and the importance of carbon dioxide?

.....

.....

.....

10- Define Nitrogen gas.

.....

11- Where the Nitrogen gas exists?

.....

12- Mention the properties of Nitrogen gas.

.....

.....

13- What are the uses and the importance of Nitrogen?

.....

.....

Q (2) Write the scientific term:

1- An important gas for living, it represents (21%) from the volume of air.

(.....)

2- The main source of oxygen gas.

(.....)

3- The mixture of gases that surrounds the Earth and attracted to it by gravity.

(.....)

4- A gas used recently in filling the tires, its volume still constant by changing the heat.

(.....)

5- The main source of nitrogen gas artificially and in labs.

(.....)

6- One of the nitrogen gas components that have an important role in producing the cements and fertilizers.

(.....)

7- The chemical substance that used in the preparation of oxygen in the labs.

(.....)

8- The catalyst that is used in preparation of the oxygen in labs.

(.....)

- 9- The substance that increases the speed of the chemical reaction without itself changing.
(.....)
- 10- The combination of oxygen gas slowly in the presence of humidity.
(.....)
- 11- The combination of oxygen gas fast with the liberation of heat and light.
(.....)
- 12- The layer that is formed on the iron surface after its exposure to humid air.
(.....)
- 13- A layer of the atmosphere protects livings on Earth form harms of the radiations.
(.....)
- 14- A flame used in melting or
- 15- The gas that is responsible for the global warming which rise the temperature of Earth.
(.....)
- 16- The compound which used in detecting the Carbon dioxide gas.
- 17- The compound which cause the turbidity of lime water during the passing of carbon dioxide gas in.
(.....)
- 18- The formed substances when entering the magnesium ribbon with carbon dioxide gas.
(.....)
- 19- A substance that is used in quick cooling for foods and medicine that affect by heating.
(.....)
- 20- A process in plants in which carbon dioxide use and oxygen gas librates.
(.....)
- 21- An element which was discovered by the scientist Rutherford and it is essential in the composition of proteins.
(.....)
- 22- A gas which is called killer
- 23- A gas which is called with azote or lifeless.
(.....)
- 24- A type of plants which produce proteins from the air nitrogen by the help of nodular bacteria.
(.....)
- 25- A substance that is used in absorption of the carbon dioxide from the air.
(.....)

Q (3) Complete the following:

- 1- is the main source of oxygen on the Earth.
- 2- Nitrogen represents % from the air.
- 3- Oxygen represents from the air.
- 4- There is a large amounts of in the atmosphere.
- 5- Nitrogen exists in the atmosphere in the State which consists of atoms.
- 6- Oxygen compressed in the cylinder and uses in the and
- 7- The global warming and rising of the temperature is the results of gas.
- 8- Carbon dioxide gas is formed of atoms and its symbol is
- 9- Carbon dioxide gas produces as a result of burning of organic matter asand
- 10- And are from the uses of the CO₂.
- 11- The percentage of the carbon dioxide in the air is
- 12- The symbol of the nitrogen gas is
- 13- The percentages of the nitrogen gas in the air
- 14- is formed through the lightning in the air.
- 15- Nitrogen gas is collected by during its preparation in the lab.
- 16- Nitrogen gas properties are , and
- 17- Nitrogen gas uses are ,and.....

Q (4) Put (✓) or (×) and correct the false one:

- 1- It isn't important to maintain the vegetation on the Earth. ()
- 2- Atmosphere is a mixture of gases surrounds the Earth. ()
- 3- Oxygen protects Earth by absorbing the ultraviolet rays that comes out from the space. ()
- 4- Oxygen occupies fifth the volume of the air. ()

- 5- Oxygen can combine with most elements directly forming oxides. ()
- 6- Nitrogen is important for respiration and burning of food in the cells. ()
- 7- The increase of CO₂ percentage in the air causing the suffocating. ()
- 8- The increasing of oxygen gas in the air causing the global warming phenomenon. ()
- 9- When you blow in the clear lime water it becomes turbid. ()
- 10- Human suffers suffocation after breathing CO₂ in. ()
- 11- Nitrogen used in fire extinguishing. ()
- 12- CO₂ used in the photosynthesis process and O₂ librates. ()
- 13- Nitrogen gas used in filling some kinds of lamps. ()
- 14- Nitrogen is used commercially in the cement and fertilizers manufacturing. ()
- 15- Nitrogen can be condensed to solid state. ()
- 16- O₂ is colorless, odorless and doesn't help in burning. ()
- 17- Legumes as pea, clover and soybean get uses from the nitrogen. ()
- 18- Nitrogen is called "azote" and it means gas of the life. ()
- 19- Nitrogen gas is composed of two hydrogen atoms. ()
- 20- Nitrogen gas reacts with most other elements. ()
- 21- Nodular bacteria fix the oxygen in the legumes as bean and clover. ()
- 22- Oxygen represents 78 % of the air. ()
- 23- Nitrogen is colorless, tasteless and helps in burning. ()
- 24- Oxygen helps in burning and doesn't help in fire extinguishing. ()
- 25- Atmosphere composed of mixture of gases surrounds the Earth. ()

Q (5) Give reason for each of the following:

- 1) Oxygen percentage is constant in the air although it consumed in the respiration process.

.....

.....

2) During its preparation in the lab, Oxygen can be collected by replacing water downward.

3) Atmosphere has a large important in the life.

4) Clear lime water becomes turbid by blowing in it.

5) Environment suffers from the increasing in the CO₂ gas.

6) The importance of CO₂ gas in life continuing.

7) CO₂ can't be collected by replacing water as oxygen.

8) CO₂ gas used in fire extinguishing.

9) CO₂ is called the silence killer.

10) Lime water is used in detecting the carbon dioxide gas.

11) Nitrogen is used in filling the tires of the cars.

12) Nitrogen gas is used in preserving petroleum.

13) The main source of the nitrogen is air.

.....
.....

14) Nitrogen gas is called azote and it means lifeless.

.....
.....

15) Yeast is added to the paste in bread making.

.....
.....

16) In the nitrogen gas preparation, air passes through sodium hydroxide solution.

.....
.....

17) Nitrogen enters in the composition of the most living tissues.

.....
.....

Q (6) Correct the underline words in the following statements:

1) The increase of the oxygen percentage in the atmosphere responsible for the global warming phenomenon.

2) Nitrogen is an essential element in composition of carbohydrates.

.....

3) Oxygen enters in the composition of the ammonia gas that is used in cement production.

4) The decrease in the oxygen percentage is compensated through the combustion processes.

5) Manganese dioxide decomposes in the presence of the catalyst into water and oxygen.

6) Oxy acetylene flame is produced by the burning of methane in the presence of nitrogen.

7) Ozone layer harms the living organisms on the Earth.

.....

8) The combination of the materials with oxygen with the liberation of light and heat is called oxidation.

① put (✓) or (X)

1. Oxygen gas is produced according to the availability of green plants during photosynthesis process ()
2. Oxygen gas is prepared from hydrogen peroxide dissociates in the presence of carbon dioxide gas ()
3. The mass of materials decreases after combination with oxygen ()
4. Ozone gas is composed of 2 atoms and it has the symbol of O_3 ()
5. The erosion of material which made of iron when exposed to moisture ()
6. Oxygen combines with a burning magnesium ribbon forming white substance ()

- 1 (✓) 2 (X) manganese dioxide 3 (X) increases (after)
4 (X) Three oxygen atoms 5 (✓) 6 (✓)

2. Think and answer: If you know that oxygen doesn't burn but helps in burning what happens to our lives if the oxygen percentage in the air is more than 21%?

We cannot control burning processes as oxygen helps in burning.

③ Justify: a) Although oxygen is consumed during respiration its percentage remains stable in the atmosphere.

Because the consumed oxygen gas during respiration and combustion processes is compensated by the green plants during photosynthesis process.

b) oxygen is collected by displacing the water downward in the jar during preparation at the Laboratory.

- Because oxygen scarcely dissolves in water.

c) The atmosphere has a great importance for the continuity of life on the Earth.

Because it :

- Absorbs Ultraviolet radiations coming from outer space.
- Adjusts the temperature of the Earth's Surface.

d) Oxygen has a great importance for life on the Earth/water consists of oxygen combined with hydrogen. Give other examples of the importance of oxygen and its uses.

1. Oxygen is important for human and all living organisms as it is used in respiration and combustion of food inside the living cells to produce energy necessary for all vital processes and it is used in formation of water.

2. Oxygen gas forms the ozone layer in the atmosphere that protects the Earth from harmful radiations that come from the sun.

3. Oxygen gas is compressed (in) iron cylinders to be used a) in mechanical ventilation for patients who suffer from breathing difficulties.

b) during surgeries.

c) during (diving) and climbing mountains.

4. Oxygen combines with acetylene gas to produce oxy-acetylene flame which is used for cutting and welding metals.

Subject :

16

5) Write the properties of oxygen gas

1. Oxygen is a colourless, tasteless and odorless gas.
2. Oxygen is collected by the downward displacement of water as oxygen rarely dissolves in water.
3. Oxygen doesn't burn, but it helps in burning.
4. Oxygen is heavier than air, so it replaces air.
5. Oxygen combines with lighted magnesium to form magnesium oxide which is white matter.
6. Oxygen has the ability to combine (unite) directly with most elements forming oxides.

1) What happens to our lives on the Earth if:

a) The percentage of carbon dioxide in the air increases.
 - The temperature of the Earth will increase.
 - Living organisms will suffocate.

b) The percentage of carbon dioxide in the air decreases.

- Green plants cannot make photosynthesis process, so the percentage of oxygen will decrease in the atmosphere and living organisms will die.

2) Complete:

a) In photosynthesis process, the plant absorbs ... gas and produces ... gas while in respiration process, ... gas is consumed and ... gas is produced.

a) Carbon dioxide - Oxygen
 Oxygen - carbon dioxide

b) The ratio of carbon dioxide gas in atmospheric air is ... and has the symbol ...

b) 0.03%

CO_2

c) Carbon dioxide gas is changed by ... and ... to liquid then pressure is relieved composing ... which use in refrigeration.

c) Pressure - Cooling
 dry ice

3) Give reasons for:

a) Carbon dioxide is used in extinguishing fires.

- Because it doesn't burn and doesn't help in burning.

b) Yeast is added to the dough on making bread.

Because by adding yeast to dough, carbon dioxide is produced during fermentation and expanded by heat making the bread porous and tasty.

c) Clear limewater becomes turbid when carbon dioxide passes in it.

Due to the formation of Calcium carbonate (white ppt) which is insoluble in water and causes the turbidity of Lime water.

d) The environment suffers from increasing the ratio of carbon dioxide gas in recent years.

Due to:

- The removal of forests.

- Combustion of massive amount of fuel (in) factories and means of transport.

Exercises from Student

Unit 3 Lesson 1

1 Put (✓) in front of the true statements or (x) in front of false statements.

a- Oxygen gas is produced according to the availability of green plants during photosynthesis process. ()

b- Oxygen gas is prepared from hydrogen peroxide dissociates in the presence of carbon dioxide gas. ()

c- The mass of materials is decreased after combination with oxygen. ()

d- Ozone gas is composed of 2 atoms and it has the symbol of O_3 . ()

e- The erosion of material which made of iron when exposed to moisture. ()

f- Oxygen combines with a lighted magnesium ribbon forming white substance. ()

2 Think and answer: If you know that oxygen does not burn but helps in burning. What happens to our lives if the oxygen percentage in the air is more than 21%?

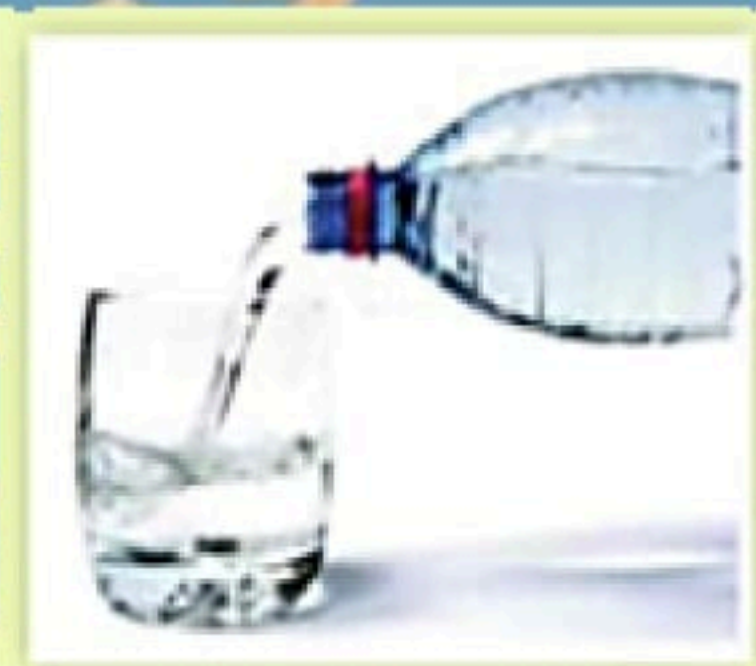
3 Justify:

a Although oxygen is consumed during respiration, its percentage remains stable in the atmosphere.

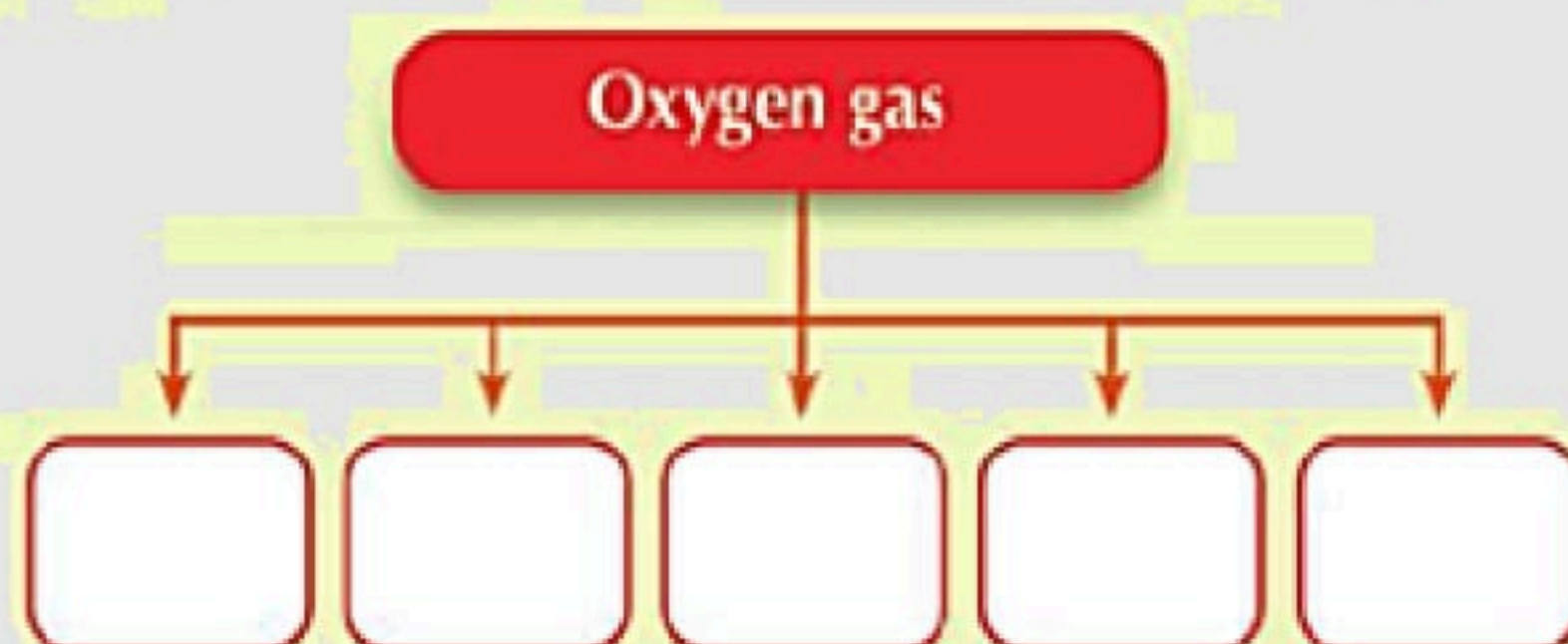
b Oxygen is created by displacing the water downward in the flask during preparation at the laboratory.

c The atmosphere has a great importance for the continuity of life on the planet.

4 Oxygen has a great importance for life on the planet. Water consists of oxygen united with hydrogen. Give other examples of the importance of oxygen and its uses.



5 Write the properties of oxygen gas in the following chart :





Model Answer

Answer Q1

a- (✓)

b- (x) in presence of Manganese dioxide

c- (x) the mass of materials increases after combination with oxygen

d- (x) the ozone gas is composed of 3 oxygen atoms

e- (✓)

f- (✓)

Answer Q2

If the oxygen percentage in the air become more than 21% the fires will increase that may cause burning of everything on Earth's surface.

Answer Q3

a. Because oxygen consumed during respiration is compensated by oxygen produced during photosynthesis process made by green plants

b. Because oxygen is scarcely soluble in water

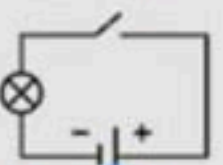
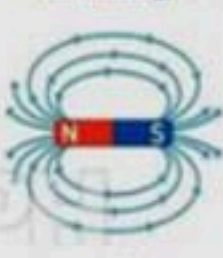
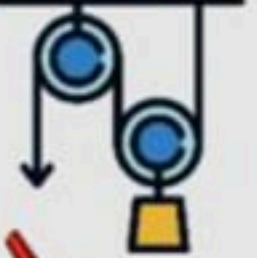
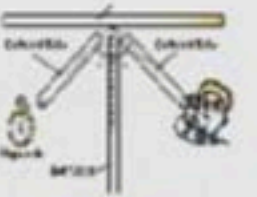
c. Because it protects Earth by absorbing ultraviolet radiations from the space, it also adjusts the temperature of Earth's surface.

Answer Q4

• Oxygen gas forms ozone layer in the atmosphere that protects the earth from harmful radiations that come from the sun

• Oxygen gas is compressed in iron cylinders.

• Oxygen combines with acetylene gas to produce oxy-acetylene flame which is used for cutting and welding metals.



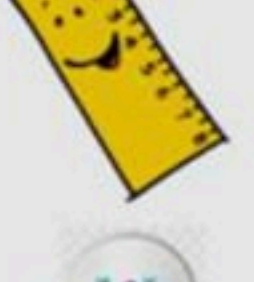
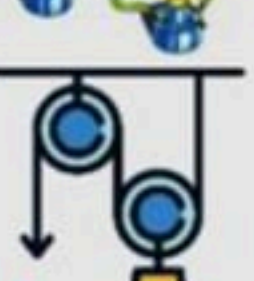
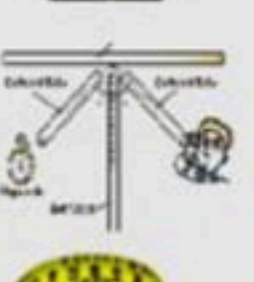
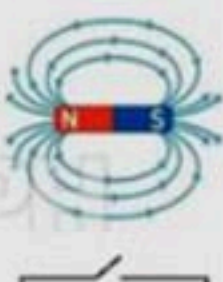
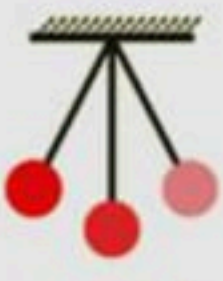


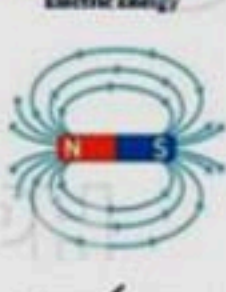
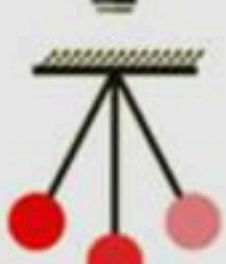
Answer Q5



Properties of oxygen

- ① Oxygen has no colour and smell
- ② Oxygen scarcely (rarely) dissolved in water
- ③ Oxygen has neutral effect on red and blue litmus paper
- ④ Oxygen doesn't burn but it helps in burning
- ⑤ Oxygen is heavier than air so it replaces the air.
- ⑥ Oxygen has the ability to combine with moist elements forming oxides.





Exercises from Student

Unit 3 Lesson 2

1 What happens to our lives on earth if:

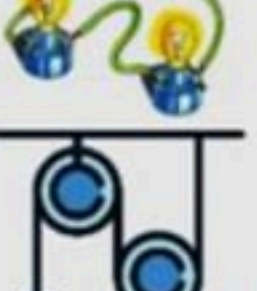
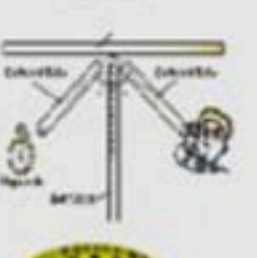
- a The percentage of carbon dioxide in the air increases.
- b The percentage of carbon dioxide in the air decreases.

2 Complete the following statements:

- a In photosynthesis process, the plant absorbs gas and produces gas while in respiration process, gas is consumed and gas is produced.
- b True ratio of carbon dioxide gas in atmospheric air is and has the symbol of
- c Carbon dioxide gas is changed by and to liquid then pressure is relieved composing which use in refrigeration.

3 Justify:

- a Carbon dioxide is used in extinguishing fires.
- b Yeast is added to the dough on making bread.
- c Clear limewater becomes turbid when carbon dioxide passes in it.
- d The environment suffer from increasing the ratio of carbon dioxide gas in recent years.





Model Answer

Answer Q1

a- Increasing the percentage of carbon dioxide gas in the air causes:

- Suffocation of living organisms
- Global warming
- Increasing the temperature of the Earth's atmosphere.
- Melting snow on the top of mountains and the two poles causing the raise of the level of sea water, so some coastal towns will drown.

b- Green plants cannot make their food by photosynthesis process

Answer Q2

a- Carbon dioxide gas – Oxygen gas – Oxygen gas – Carbon dioxide gas.

b- 0.03% - Its molecule – CO_2

c- Pressure and cooling – dry ice.

d- To absorb carbon dioxide from air.

e- Because it forms protein needed for building all living tissues.

Answer Q3

a- Because it doesn't burn and doesn't help in burning.

b- Because yeast produces carbon dioxide gas during fermentation process that expands by heating making the bread porous and tasty.

c- Due to formation of calcium carbonate which is insoluble in water.

d- Because of:

1. removal of forests
2. Burning of large amounts of fuel in factories and means of transportation.

